RECLAMATION
Managing Water in the West

Mid-Pacific Region

Central Valley Project Hydropower Production

Introduction

Reclamation's Mid-Pacific Region has eleven hydroelectric powerplants in the Central Valley Project (CVP) with a maximum operation capability of 2,100 megawatts (MW) when all reservoirs are at their fullest. The power generated from these plants helps California meet its energy needs and assists the economy.

CVP Powerplants and Capacities:

Northern California Area Office (NCAO)

Shasta Dam	710 MW
Trinity Dam	140 MW
Judge Francis Carr	154 MW
Spring Creek	180 MW
Keswick Dam	105 MW
Lewiston Dam	350 kilowatts (KW)

Central California Area Office (CCAO)

Folsom Dam	207 MW
Nimbus Dam	17 MW
New Melones Dam	383 MW

South-Central California Area Office (SCCAO)

O'Neill	14.4 MW
San Luis	202 MW

What's a kilowatt?

When you use electricity to cook a pot of rice for 1 hour, you use 1,000 watt-hours of electricity! 1,000 watt-hours equals 1 kilowatt-hour, 1 kWh. Your utility bill usually shows what you are charged for the kilowatt-hours you use. The average residential rate is 8.3 cents per kWh. A typical U.S household consumes about 11,000 kWh per year, costing an average of $900 annually.

Source: Consumer Guide to Home Energy Savings, 8th Edition. 2003. Washington, D.C.: ACEEE; www.aceee.org.

A megawatt (MW) is 1,000 kilowatts

What Reclamation is Doing

The CVP had a memorable power generation year in 2006, producing 7,301,045 megawatt hours (MWh). Typically, the CVP generators produce about 4,500,000 MWh in an average water year. In FY2010, CVP power generation was 4,222,000 MWh. Because of the wet winter conditions and expected high runoffs and high reservoir levels, by the end of fiscal year 2011, the CVP is forecasted to produce 5,730,000 MWh.

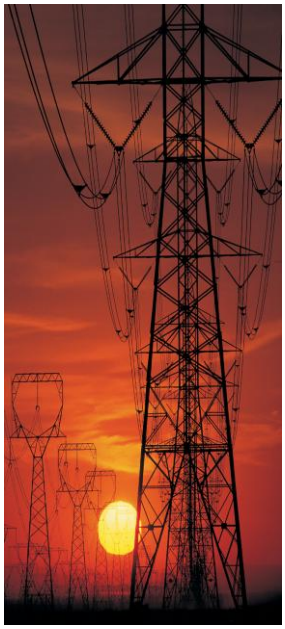
What it Takes to Get the Job Done

CVP powerplants are operated 24 hours a day, 365 days a year. Facilities staff implements a comprehensive preventative maintenance program to ensure everything remains running, coordinating outage scheduling for optimization of water and power, and accomplishing facility and equipment improvements. In addition, each generator is taken out of service in the fall or early winter for approximately 2-3 weeks for extended maintenance, repairs, and minor improvements.

At NCAO facilities, many upgrades and improvements have recently taken place. In June 2008, rewinding and runner replacement for the last unit at Shasta was completed. The five original units

each rated at 75 MW now each produce 142 MW. At CCAO, both Folsom and Nimbus powerplants are due for major overhauls with Unit 2 contract awarded for this work and expected to be completed August 2011. Work is being performed during the October-June outage periods which began in 2009 and ends in 2014. With this strategic blend of preventative maintenance and facility enhancements, hydropower production and reliability is increased, but remains very economical.

NCAO has 75 craftsmen, as well as managers, engineers, and other support staff who together keep the power flowing. CCAO has a centralized Operations and Maintenance (O&M) staff consisting of about 30 craftsmen and 6 engineers.



Reclamation Partners

From a power perspective, Reclamation's customers are both water and power users; both value the products produced by the CVP. To ensure reliability and dependability of the energy generated by CVP powerplants, Reclamation's power customers began advance financing of the power O&M portion of the CVP budget in 1998. The Western Area Power Administration (WAPA), markets and transmits the energy the CVP produces. WAPA follows a formal procedure for allocating CVP energy to "preference" customers. Those customers have 20-year contracts (that expire in 2024) for their share of the CVP energy that is in excess of Reclamation's water pumping needs.

How CVP Hydropower Contributes to the Economy

CVP energy is sold "at cost" to our customers. This cost is approximately $30 per MWh to CVP preference customers and is based on specific capital costs due to construction of the CVP plus annual O&M costs allocated to power. On top of the price paid for the CVP energy, the preference customers also pay approximately $15 per MWh for their contribution to the CVP restoration fund.

CVP Hydropower Makes a Difference During Heat Waves

CVP power generation is "shaped" so that maximum production is predominantly available during the peak hours of noon to 6 p.m. Releases from Reclamation's regulating reservoirs – Natomas, Keswick, and Lewiston – are held constant during a 24-hour period so they are at their lowest levels by early morning as upstream generators do not generate during that time (off-peak periods). Then, these same upstream generators can be loaded heavily during higher peak demand times, thus filling the regulating reservoirs by early evening. On August 25, 2010, CVP hydroelectric powerplants produced about 1,200 MW of the 47,350 MW Californians needed at the peak of electrical usage.

For More Information:
MP Region Public Affairs
916-978-5100
www.usbr.gov/mp

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